

CLAIMS

1. A method for producing hydrogen by Pressure Swing Adsorption in a PSA unit of a feedstock gas at a first pressure ( $P_1$ ) containing hydrogen, with compressed waste being sent to a fuel gas mixture distribution network at a second pressure ( $P_2$ ), lower than the pressure ( $P_1$ ), and containing hydrogen, involving the step of tapping off a fraction of the fuel gas mixture flowing through the network, of compressing it more or less to the first pressure ( $P_1$ ) and of injecting it by way of additional feedstock gas into the PSA unit.
2. The method as claimed in claim 1, characterized in that it involves the step of injecting the fraction of fuel gas mixture into the feedstock gas.
3. The method as claimed in claims 1 and 2, characterized in that the first pressure ( $P_1$ ) ranges between about 15 and 45 bar and the second pressure ( $P_2$ ) ranges between about 3 and 8 bar.
4. The method as claimed in one of the preceding claims, characterized in that the waste is extracted from the pressure swing adsorption unit at a third pressure ( $P_3$ ) ranging between about 1.1 and 2 bar.
5. The method as claimed in one of the preceding claims, characterized in that the fuel gas mixture contains at least 30% hydrogen.
6. The method as claimed in claim 5, characterized in that the fuel gas mixture contains between about 35 and 50% hydrogen.

7. An installation for implementing the method as claimed in one of the preceding claims, comprising:
- at least one feedstock gas supply pipe (3);
  - 5 - at least one line (10) of a fuel gas mixture distribution network;
  - at least one PSA unit (1) for separating gases by adsorption having one inlet (2) connected to the feedstock gas pipe (3), a production gas
  - 10 outlet (4) and at least one waste gas outlet (7);
  - a first compressor (9) connecting the waste gas outlet (7) to the line (10); and
  - a second compressor (13) connecting the line (10) to the inlet (2) of the PSA unit.
- 15
8. The installation as claimed in claim 7, characterized in that the second compressor (13) is placed in a pipe (12) connecting the line (10) to the feedstock gas pipe (3).
- 20
9. The installation as claimed in claim 7 or 8, characterized in that the second compressor (13) is connected to the line (10) upstream of the latter's connection to the first compressor (9).
- 25
10. The installation as claimed in one of claims 7 to 9, characterized in that the first (9) and second (13) compressors use common subassemblies.
- 30
11. The installation as claimed in claim 10, characterized in that the first (9) and second (13) compressors have a common driveline (14).